

## AMENDMENTS TO CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **Listing of Claims:**

1. (Currently Amended) A system for managing broadband IP services in a layer two broadcast network comprising:

at least one intermediate system receiving traffic from outside and forwarding the traffic to at least one end system and also forwarding the response traffic from the at least one end system to the outside, wherein the at least one intermediate system forwards a service request packet to an available one of the at least one ~~available~~ end system that the intermediate system learned about from ~~the~~ service advertisements by the at least one end system;

the one of the at least one end system advertising and providing service information on the layer two network, wherein if the one of the at least one end system determines to instruct another one of the at least one intermediate system to forward certain traffic from a certain source to another one of the at least one end system, the one of the at least one end system can advertise ~~the~~ flow information to the ~~other~~ another one of the at least one intermediate system, and wherein the service information is advertised by each of the at least one end system on the layer two network, ~~and~~ the at least one intermediate system always forwards the packet based on the flow that is advertised by the one of the at least one end system, and each of the at least one end system can be added on the fly to share the load and gracefully shut down on the fly without interrupting other systems on the network and affecting ~~the service of the other systems~~; and

at least one ~~supervisor control~~ system handling the registration from all the systems on this layer two network, responding ~~the to a~~ request of any new system that looks for ~~the a~~ server list for a particular service on this network, running as an Assigned Numbers Authority server for this layer two network, and running as a management agent that manages all the systems registered to the at least one ~~supervisor control~~ system.

2. (Currently Amended) A system for managing broadband IP services in a layer two broadcast network comprising:

at least one intermediate system listening to service information advertised by at least one end system and relayed by at least one ~~supervisor-control~~ system, storing the at least one end system and the at least one ~~supervisor-control~~ system into a server table of the at least one intermediate system, storing the advertisement in ~~the~~ a flow table in addition to the server table, forwarding ~~the new request-requested~~ traffic to one of the at least one end system looked up from this server table, forwarding ~~the~~ a packet based on the flow that is advertised by the at least one end system, and receiving traffic from outside and forwarding the traffic to at least one end system and also forwarding the response traffic from the at least one end system to the outside, wherein the at least one intermediate system forwards a service request packet to an available one of the at least one ~~available~~ end system that the intermediate system learned about from ~~the~~ service advertisements by the at least one end system, and if the at least one end system determines to instruct the at least one intermediate system to forward certain traffic from a certain source to the at least one end system, the at least one system can advertise the flow information to the at least one intermediate system;

the one of the at least one end system advertising and providing service information, which contains ~~the~~ operations of registration of services by the at least one end system, ~~the~~ service congestion status and a server list for a particular service, on the layer two network, wherein if the one of the at least one end system determines to instruct another one of the at least one intermediate system to forward certain traffic from the certain source to another one of the at least one end system, the one of the at least one end system can advertise ~~the~~ flow information to the ~~other~~ another one of the at least one intermediate system, and wherein the service information is advertised by each of the at least one end system on the layer two network, ~~and~~ the at least one intermediate system always forwards the packet based on the flow that is advertised by the one of the at least one end system, and each of the at least one end system can be added on the fly to share the load and gracefully shut down on the fly without interrupting other systems on the network and affecting ~~the service of the other systems~~; and

~~the~~ at least one ~~supervisor control~~ system handling the registration from all the systems on this layer two network, responding ~~the to a~~ request of any new system that looks for the server list for a particular service on this network, running as an Assigned Numbers Authority server for this layer two network, and running as a management agent that manages all the systems registered to the at least one ~~supervisor control~~ system.

3. (Currently Amended) The system of claim 1 ~~[[,]]~~ or ~~claim-2~~, wherein the flow ~~is~~ includes an established TCP connection or any packets ~~that are specified by pattern matching rules matched to an advertised flow,~~ wherein for the packets that ~~don't~~ do not match any advertised flow, the service table ~~is adapted to~~ will be looked up and one of the said at least one end system will be picked up based on a loading metric, and wherein both a service and a flow classification are specified in pattern matching rules that match packets to the advertised flow to allow faster execution by ~~the~~ pattern-matching network processors.

4. (Currently Amended) The system of claim 1 or 2, wherein the flow advertisement contains ~~the~~ flow attributes that could contain ~~the~~ quality of service requirements to support real time application, and ~~the a~~ flow advertisement contains also the flow attribute that could insert or delete a label or tag or modify ~~the a~~ type of service and priority within ~~the a~~ packet header to support multiple protocol label switching, DiffServ and 802.1 priority.

5. (Currently Amended) The system of claim 1 or 2, wherein the Assigned Numbers Authority protocol manages all the numbers that are shared by these servers that work together as one logical IP entity on this network, and, the service information, flow advertisement and Assigned Numbers Authority protocol together also allows the at least one end system to load-balanced serve a service like one logical end system.

6. (Currently Amended) The system of claim 1 or 2, wherein the at least one intermediate system is on an IP router.

7. (Original) The system of claim 1 or 2, wherein the at least one intermediate system is a switch-type device.

8. (Original) The system of claim 1 or 2, wherein the at least one end system is an HTTP server.

9. (Original) The system of claim 1 or 2, wherein the at least one end system is an FTP server.

10. (Original) The system of claim 1 or 2, wherein the at least one end system is a firewall proxy server.

11. (Original) The system of claim 1 or 2, wherein the at least one end system is an IPSEC tunneling server.

12. (Currently Amended) The system of claim 1 or 2, wherein the at least one end system is ~~an~~ a Network Address Translation server.

13. (Currently Amended) A method for managing broadband IP services in a layer two broadcast network including at least one end system, at least one intermediate system, and at least one ~~supervisor-control~~ system, comprising the ~~step-steps~~ of:

directing a packet by the at least one intermediate system to the at least one end system based on a service registration and server congestion advertisement message sent by the at least one end system;

directing a flow to the at least one end system which advertises the flow routing information to the at least one intermediate system.

14. (Currently Amended) A method for managing broadband IP services in a layer two broadcast network including at least one end system, at least one intermediate system, and at least one ~~supervisor-control~~ system, comprising the steps of:

advertising service information by the at least one end system;

relaying the service information by the at least one ~~supervisor control~~ system;  
listening to the service information by the at least one intermediate system;  
storing the at least one end system and the at least one ~~supervisor control~~ system into a server table of the at least one intermediate system by the at least one intermediate system;  
storing the advertisement in ~~the~~ a flow table in addition to the server table by the at least one intermediate system;  
forwarding the newly ~~request~~ requested traffic to one of the at least one end system looked up from this server table by the at least one intermediate system;  
forwarding ~~the~~ a packet based on ~~the~~ a flow that is advertised by the at least one end system ~~by to~~ the at least one intermediate system; and  
receiving traffic from outside and forwarding the traffic received from outside to the at least one end system and also forwarding ~~the~~ response traffic from the at least one end system to the outside by the at least one intermediate system.

15. (Currently Amended) The method claim 13 or 14, wherein ~~the~~ a service and flow classification are specified in pattern matching rules that match packets to an advertised flow to allow faster execution by ~~the~~ pattern-matching network processors.

16. (Currently Amended) The method claim 13 or 14, wherein ~~the~~ service information contains ~~the~~ operations of registration of services by servers, ~~the~~ service congestion status and a server list for a particular service, the flow advertisement contains ~~the~~ flow attributes that could contain ~~the~~ quality of service requirements to support real time application, and the flow advertisement contains also ~~the~~ a flow attribute that could insert or delete a label or tag or modify ~~the~~ a type of service and priority with ~~the~~ a packet header to support multiple protocol label switching, DiffServ and 802.1 priority.